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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/706,931

11/14/2003

Kenichi Nakata

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EXAMINER

BEHM, HARRY RAYMOND

ART UNIT

PAPER NUMBER

2838

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/06/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/706,931	<b>Applicant(s)</b> NAKATA, KENICHI	
	<b>Examiner</b> Harry Behm	<b>Art Unit</b> 2838	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/16/05 and 11/14/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Claims 1-5 in the reply filed on 7/06/06 is acknowledged.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (US 5,212,630).

With respect to Claim 1, Yamamoto discloses a power supply device (Fig. 1) comprising: a switching element (Fig. 2B Q1) connected between two different potentials (Fig. 2B +,-); an output smoothing section (Fig. 1 101,102) for smoothing a voltage outputted from a terminal (Fig. 2B U) of the switching element and producing an output voltage (Fig. 1 VB) provided for a load (Fig. 1 LOAD); a driver section (Fig. 1 400) for driving and controlling the switching element; and an output current sensing section (Fig. 1 200a, 406a for one inverter; second inverter is not required but could be implemented; likewise 200b if second inverter is implemented) for monitoring current (Fig. 1 IL) flowing through the load, the output current sensing section provided in a stage after the output smoothing section (Fig. 1 101,102), wherein, when a desired (Fig. 1 7) output voltage (Fig. 1 VB) is produced from an input voltage (Fig. 1 5), the

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switching element (Fig. 2B Q1) is driven and controlled by the driver section (Fig. 1 400) by incorporating a monitored result (Fig. 1 IL\*) obtained by the output current sensing section (Fig. 1 406a).

With respect to Claim 2, Yamamoto discloses a power supply device as claimed in claim 1, wherein the driver section (Fig. 1 504a,503,403,502,402,501,401,500) includes: an error amplifier (Fig. 1 503) for amplifying a voltage difference between a first monitored voltage (Fig. 1 300 output) which varies according to the output voltage and a predetermined reference voltage (Fig. 1 V\*) so as to produce an error voltage (Fig. 1 503 output); a comparator (Fig. 1 501) for producing a comparison signal [compares the signals by taking the difference] by comparing between a second monitored voltage (Fig. 1 IA1\*) which varies according to a driving current (Fig. 1 IA1) flowing through the switching element (Fig. 1 Q1 for positive current) and the error voltage (Fig. 1 503 output from LIMITER); a driving signal [transistor base] generating section for generating a driving signal for driving the switching element in accordance with the comparison signal (Fig. 1 501 output); and an offsetting section (Fig. 1 502,406a) for providing an offset [adds offset IL1\*] in accordance with a result monitored by the output current sensing section (Fig. 1 406a) either for the second monitored voltage before [before comparator] the second monitored voltage is inputted to the comparator or for the error voltage before the error voltage is inputted to the comparator.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5,212,630) in view of Tsujimoto (US 6,288,524).

With respect to Claim 3, Yamamoto discloses a power supply device as claimed in claim 2. Yamamoto does not explicitly detail the contents of the PWM circuit 400, although an example of comparing a triangular wave to the voltage command signal is described. Yamamoto does not disclose wherein the driving signal generating section comprises a reset-priority-type RS latch circuit having a reset terminal for receiving the comparison signal, a set terminal for receiving a clock signal, and an output terminal for outputting the driving signal.

Tsujimoto teaches a power supply with a hysteretic controller, wherein the driving signal generating section comprises a reset-priority-type RS latch (Fig. 10 202) circuit having a reset terminal for receiving the comparison signal (Fig. 10 Vres), a set terminal for receiving a clock signal (Fig. 10 Vset), and an output terminal for outputting the driving signal (Fig. 10 Q output).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use an R-S latch to generate the driving the signal. The reason for doing so is so "the output voltage  $V_{out}$  is held constant by controlling the inductor current  $I_L$  with

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the use of the current instruction signal  $I_{cont}$  generated based on the output voltage  $V_{out}$ . The output voltage to be held by this DC/DC converter is determined by the reference voltage  $V_{ref}$  (Tsujiimoto column 2, lines 14-18).

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 5,212,630) in view of Talbot (WO 00/79370).

With respect to Claim 4, Yamamoto discloses a power supply device as claimed in claim 2, wherein the output current sensing section comprises current detector 200a. Yamamoto does not disclose the type of current detector. Talbot teaches a power supply measuring the output current with a sensing resistor (Fig. 2 R1). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a sense resistor for the reason of sensing the output current.

With respect to Claim 5, Yamamoto in view of Talbot discloses a power supply device as claimed in claim 4, wherein the offsetting section (Fig. 1 502,406a) includes an amplifier (Fig. 3 406U) for amplifying a voltage across the sensing resistor and a variable DC voltage source (Fig. 3 IL1\*) for providing an offset voltage in accordance with an output voltage (Fig. 3 IL1\*) of the amplifier for either the second monitored voltage or the error voltage [for the error voltage].

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cohen (US 7,098,631) and Pai (US 6,947,300) disclose power supplies sensing the output current, output voltage and inductor current. Any inquiry concerning this communication or earlier communications from the examiner should be

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directed to Harry Behm whose telephone number is 571-272-8929. The examiner can normally be reached on Business EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KARL EASTHOM  
SUPERVISORY PATENT EXAMINER